

TO: **FILE - THATCHER COMPANY, formerly: THATCHER CHEMICAL**

THROUGH: Jeff Dean, Compliance Manager 

FROM: Gisela Jensen, Environmental Scientist

DATE: April 17, 1998

SUBJECT: **THATCHER COMPANY** 03500119  
**B,NA, HAPS, VOC, 035-00081- SALT LAKE COUNTY**



1285 AIR

SSIU/IR

TYPE OF INSPECTION: Initial/ Annual

DATE OF INSPECTION: **4/3/98:** (Initial Contact and new AO review), **4/14/98:** (pollution equipment inspection but weather too inclement for VEOs: snowed and rained ) , and **5/7/98** (for clear weather VEO observation of Sulfur Unit and exit interview)

MULTIPLE INSPECTION SOURCE No

SOURCE LOCATION: 1905 Fortune Road, Salt Lake City, Utah 84127  
Ph: 801-972-4587

SOURCE CONTACT: Dale Hansen Ph.D., Chemist  
Bruce Bastian, Industrial Hygienist  
Larry Ditrich, Plant Engineer

OPERATING STATUS: Operating **except for:**  
1. Ferric Chloride production  
2. Nitric acid production  
3. Sodium bisulfite byproduct recycling  
4. Aqua Ammonia line  
5. Stainless reactor, used for some of the above listed processes  
6. Milling and bagging operations of soda ash, alumina and quicklime

## PROCESS DESCRIPTION:

Production, processing , storing and re-packing of numerous liquid- and dry chemicals, and pharmaceuticals.

1. By far the largest volume of materials produced at this site is: sulfur dioxide in gaseous and liquid forms and as an intermediary for sulfur trioxide, sulfurous and sulfuric acids, sodium (bi)sulfate and other sulfur based compounds which are either sold as is, or used in some of the on-site processes. The sulfur compounds manufacturing is one of three with a production limit listed in the AO. Nitric Acid and liquid chlorine are the other two.

The source employs the SO<sub>2</sub> "contact process" which is as follows:

Elemental molten sulfur is received by rail in heated containers and transferred to heated storage tanks. The molten sulfur is then sprayed into a burner, thus producing hot sulfur gas at a concentration of approx. 18% SO<sub>2</sub>. The sulfur dioxide gas stream is then converted to sulfur trioxide with the evolution of heat from the 280 degrees F of the molten sulfur to approx. 450 degrees in the exothermic reaction. The SO<sub>3</sub> gas then passes to the first of two tower spray cooling system for temperature quenching and the addition of water, producing sulfuric acid. The second tower is in use to dissolve the gas from the stream and thereby producing sulfurous acid. The remaining combustion gases are passed through a sodium sulfite absorption tower for scrubbing to a 50 ppm max. SO<sub>2</sub>. The scrubbing liquor and neutralizer is a soda ash (sodium carbonate) solution.

The sulfur dioxide stream is then stripped from the sulfurous acid, cooled, and passed through a drying system utilizing sulfuric acid to remove the water vapors and to further dry the SO<sub>2</sub>. It is then compressed and liquefied for use in on site manufacturing or sold. Some of the liquid SO<sub>2</sub> is purchased elsewhere in bulk, delivered by rail and re-packed into smaller units for distribution and sold without any further processing. Sodium sulfite is manufactured along this circuit as a usable byproduct: It is generated by the blending of soda ash, SO<sub>2</sub> and water.

2. Nitric Acid is produced by the oxidation of ammonia by air or oxygen. This takes place in the glass reactor. Aqua Ammonia is the precursor for this material.
3. Calcium nitrate is produced by blending nitric acid with quicklime. Some of the quick lime, as calcium oxide, remains unreacted and is treated as waste. The dry quick lime is purchased elsewhere, but re-packed on site. This is mentioned here because the lime storing and processing has great potential for PM emissions and is controlled by a baghouse. In addition, NO<sub>x</sub> gasses are produced during the blending of the ingredients for calcium nitrate reaction process.
4. Ferric Chloride is derived by the action of ferrous chloride from elemental iron, and chlorine gas. Remaining is an iron sludge as the waste product.
5. Three products are processed or manufactured in the chlorine area: Bleach, T-Chlor: a powdered chlorine product, and chlorine repacking. Bleach and chlorine are produced in the same manner: A 25% sodium hydroxide is mixed with water and sparged with chlorine, as Cl<sub>2</sub>. Regular salt is as sodium chloride remains unreacted and treated as waste.

In addition to the main manufacturing processes described above, numerous pharmaceutical products are manufactured or mixed by Thatcher Chemicals, none of which was formulated during the days of this inspection. These products are made in small batches, inconsequential to the overall emissions profile. Some of the raw materials involved in these formulations are stored or packed in containers served with baghouses because of their fine granular nature.

#### Emission Controls:

There are 18 various control systems installed, all listed on Appendix B of the Approval Order. They operate as follows:

1. The SO<sub>2</sub> production lines are serviced by a packed bed wet scrubber with additional monitoring requirements, such as in-stack SO<sub>2</sub> monitoring to establish emissions, continuous monitoring of the pH level in the soda ash scrubbing liquid. The effluent to the outside must measure below 50 ppm of SO<sub>2</sub> for any single source point before emitted to the air.
2. The two sodium bisulfite production lines collect the materials in a wet scrubber also controlled by pH levels and soda ash scrubbing solution.
3. The chlorine emissions are collected by a locally installed ducting system and diverted to the scrubber, also used for the sodium bisulfite. The scrubbing liquid is different for this material and the pH does not require monitoring. Instead, it requires liquid flow rates monitoring.
4. Nitric Acid production is controlled by an impinjet scrubber with urea as the scrubbing liquid.
5. The Ferric chloride line is controlled by a wet scrubber and mist eliminator.

Additional scrubbers (Venturi and packed bed) are installed at the HCL transfer points, the alum production, the aqua ammonia tank and the stainless steel and glass reactors.

Two baghouses control the dry product storage and transfer, and the bagging operation which include cartridge filters cleaned by an intermittent pulse jet system. Cartridges are replaced when required. None of the baghouses and hopper dust collectors have a pressure drop differential monitoring system requirement as per this AO. (See also Appendix B.) Dry powder transfer from railcar to railcar is not permitted and must instead be pumped to the hoppers and silos controlled by the above baghouses.

APPLICABLE  
REGULATIONS: **AO dated August 5, 1997- DAQE-341-97**

SOURCE INSPECTION  
EVALUATION:

**condition 1.** This AO applies to the following company:

<u>Facility Location</u>	<u>Corporate Office Location</u>
Thatcher Company	Thatcher Company
1905 Fortune Road	P.O. Box 27407
Salt Lake City, Utah 84127	Salt Lake City, Utah 84127
Phone Number:	(801) 972-4587
Fax Number: (801) 972-4606	

The equipment listed below in this AO shall be operated at the following location:

PLANT LOCATION:

1905 West Fortune Road (1250 South), Salt Lake City, Utah, Salt Lake County  
Universal Transverse Mercator (UTM) Coordinate System:  
4,510.3 kilometers Northing; 420.2 kilometers Easting; Zone 12

**status:** The listed statistics are correct except the source is now called Thatcher Company, verified during the inspection.

**condition 2.** Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code Rule 307 (UAC R307), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

**status:** The company was informed of source documents on which this AO is based.

**condition 3.** Thatcher Chemical (TC) shall operate the chemical processing plant and shall install and operate the numerous scrubbers and baghouses according to the terms and conditions of this AO as requested in the Notice of Intent dated March 18, 1996 and additional information submitted to the Executive Secretary dated August 8, 1996.

**status:** The compliance status of this condition is addressed in condition #7. Not all of the installations are operating as required per this condition.

**condition 4.** Prior to operating new equipment, not contained on the equipment list in Appendix B attached to this document, the owner/operator shall submit a notification letter to the DAQ. This notification letter shall include an explanation of the process involved, new emission rates occurring from the process, equipment parameters, Standard Operating Procedures (SOPs) for each piece of equipment being added, and include a reference to this AO. DAQ's written response to this notification letter will be added to TC's file and serve as approval, if allowable, for this equipment until the annual equipment list modification occurs. For equipment being removed from Appendix B a notification letter is also necessary, but will only require an equipment description to be given.

If the current emission limitations are exceeded by this equipment change, TC shall be required to submit a Notice of Intent in accordance with R307-1-3.1.1, UAC.

**status:** **Not in total Compliance.** To date, no new equipment, process or other emission sources were added to the list in Appendix B. However, the sodium hydroxide and the nitric acid scrubber liquor was replaced with urea. According to Dr. Hansen, the urea works better than the permitted NaOH. This is a relatively minor point as both serve the purpose to neutralize the highly acidic waste stream, but needed to be addressed.

**condition 5.** A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive proper instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

**status:** The posting of the AO is not entirely feasible because this plant is spread out to several buildings and over a wide area. However, the AO is in the SOP training manual for the discussion and review as well as the training of affected employees.

**condition 6.** This AO shall replace the AO(s) dated September 21, 1994 (DAQE-789-94).

**status:** Only the present AO was used for this inspection.

**condition 7.** The approved installations shall consist of the equipment or equivalent\* listed in Appendix B (Thatcher Company Air Quality Equipment) attached to this document. An annual update of Appendix B shall be submitted to the DAQ by January 31st of each year.

\* Equivalency shall be determined by the Executive Secretary.

**status:** **Not in total compliance.** Although no new equipment or installations were noted during the inspection some of the required performance indices and parameters of control equipment as listed in the Appendix B were not operated as required. Condition # 16 addresses this specifically and will be detailed under the status of condition 16. Also, the Appendix B was not submitted as required by the above date, but were faxed to this office on April 2, 1998 upon my request.

**condition 8.** The sulfur dioxide wet scrubber shall control process streams from the sulfur dioxide manufacturing equipment and sulfur dioxide tank filling. This wet scrubber shall be sized to handle at least 1600 ACFM for the existing conditions. All exhaust air from the sulfur dioxide manufacturing equipment and fugitive emissions from the sulfur dioxide from tank filling shall be collected and be routed through the sulfur dioxide wet scrubber before being vented to the atmosphere.

**status:** The Sulfur Dioxide producing unit is controlled by a wet scrubber; the specs and parameters listed on the enclosed equipment list (Appendix B)  
The air flow is according to the manufactures spec. and cannot be verified without gages or a stack test.

**condition 9.** Visible emissions from the following emission points shall not exceed the following values:

- A. All scrubbers - 15% opacity
- B. All baghouses - 10% opacity
- C. All other points - 20% opacity

Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

**status:** **Item A: Not in compliance**

Opacity observations were conducted as follows: The processes controlled by baghouses were not operating and/ or showed no emissions on the initial and subsequent days of this inspection.

The Sulfur Unit was in operation upon return to the source on May 7, 1998 after it had been down for maintenance for about a week.

Emissions observed at the stack of the Sulfur Unit showed an average of 18.5% opacity which is non-compliant with the above condition, item A. No fugitive or "all other points" emissions as listed in item C of this condition were observed.

**condition 10.** The following production or usage limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

- A. 20,000 tons per rolling 12-month period of sulfur dioxide, anhydrous
- B. 10,500 tons per rolling 12-month period of liquid chlorine, anhydrous
- C. 10,000 tons per rolling 12-month period of 98% nitric acid, 98%

Compliance with the annual limitations shall be determined on a rolling 12-month total. The record shall be summarized by concentration and weight after the conclusion of each month, giving an annualized estimate on a rolling 12-month basis. Records of production or usage shall be kept for all periods when the plant is in operation. Records of production or usage, including rolling 12-month totals shall be made available to the Executive Secretary or her representative upon request and shall include a period of two years ending with the date of the request. Production or usage shall be determined by sale, repackaging or manufacturing of the products listed above. The records shall be kept on a daily basis.

**status:** In Compliance. The enclosed production log shows:

- A. 7,970 tons for anhydrous sulfur dioxide
- B. 4,453 tons for anhydrous liquid chlorine
- C. 5,571 tons of Nitric Acid

(Note: The enclosed rolling totals for production are listed in lbs not tons).

**condition 11.** The Sulfur Dioxide scrubber stack emissions shall not exceed 50 ppm. The pH of the scrubber liquor shall remain above 6.5 at all times. The pH shall be monitored by two (2) pH probes installed in the scrubbing liquor. The pH probes shall be calibrated against a primary standard at least once every 180 days. The primary standard shall be established by the company and shall be submitted to the Executive Secretary for approval.

**status:** In Compliance. The source has installed a closed circuit TV monitor showing the above required measurements continually complemented by logs with handwritten entries at an 15 minute interval. Two such logs are attached to this report. At no time during the real-time readouts at the monitor did the pH fall below 6.5 ( It is actually kept closer to a neutral pH level of Ph between 6.9 and 7.1)

**condition 12.** The owner/operator shall use only natural gas as a primary fuel. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

**status:** In Compliance. There is no other fuel used at this source.

**condition 13.** The plant-wide emissions of VOCs and HAPs from the scrubber operation and associated operations shall not exceed:

0.40 tons per rolling 12-month period for VOCs

3.61 tons per rolling 12-month period for HAPs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with each limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

The plant-wide emissions of VOCs and HAPs emitted to the atmosphere shall be determined by maintaining a record of VOC potential and HAP potential contained in materials used each month. The record shall include the following data for each item used:

- A. Name of the VOC and HAPs emitting material.
- B. The weight and use location (name of plant facility) of the VOC potential and HAP potential of the material(s) listed in A in pounds.
- C. Percent by weight of all VOC potential and HAP potential for each individual material listed in A.
- D. Amount and location of materials containing VOCs and HAPs used on a daily basis and summed for every location and for the entire plant each month.
- E. Records of VOCs and HAPs shall be kept for all periods when the plant is in operation. Records shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

**status:** **Not in Compliance.** Company records showed the total (fugitive and point) VOC emissions to be 104 lbs and 0 HAPS for 1997. However, additional records requested from the company's inventory log, showed a Xylene through-put (a HAP for any or mixed isomers and a VOC), of 21.5 tons, and for Isopropyl Alcohol use of 210 tons in the period AUG.1997 and March 1998 (effective dates for this AO) NSR has not calculated a PTE for these materials specifically , nor has the source submitted an emission inventory to date, because of their "B" Source designation. However, item E of the above condition requires these records to be kept and retrievable from the company's inventory control system. Separate record keeping for these materials is required and has been instituted by Thatcher.

**condition 14.** All HAPs are subject to the annual Operating Permit Program if one of the following conditions is met:

- A. The emissions of any one of the 189 HAPs listed in the 1990 Clean Air Act is over 10 tons/yr
- B. The emissions of any combination of these HAPs are over 25 tons/yr

**status:** At present, the emissions from HAPs materials has been calculated to be below these de minimis values.

**condition 15.** Beginning May 1, 1997, air monitoring shall be required for scrubber stacks where sulfur dioxide is produced. The monitor shall be calibrated on a quarterly basis, or more frequently if needed to provide reliable readings. Monitors may be used for measuring stack or fugitive sulfur dioxide emissions but will be utilized at least 50% of the time on the scrubber stack for the production facility. Information on reliability and monitor use must be recorded in appropriate logs. These logs shall be made available to compliance inspectors upon their request.

**status:** In Compliance. Logs have been kept accurately and timely at the Sulfur Unit. The monitors are observed by an operator, who also records the results on hard copy every 15 minutes and corrects any deviations from standards. If SO<sub>2</sub> emissions are above the allowable 50 ppm rate or the pH drops below 6.5 an alarm is set to go off and shuts the unit down. The pH meter and the SO<sub>2</sub> monitor are calibrated within the required time frames as required.

**condition 16.** All installations and facilities authorized by this AO shall be adequately and properly maintained. Maintenance records shall be maintained while the plant is in operation. All pollution control equipment shall be installed, maintained, and operated. For each manufacturing process and its emission control equipment TC shall maintain standard operating procedures (SOPs) with logs that provide a record of manufacturing specifications, equipment performance, servicing, repair, replacement or equipment addition. Logs must collect data adequate to show that manufacturing equipment and air emission control devices are adequately maintained and operating within specifications. These include liquid flow-rate measuring devices, pH probes, scrubber solute assay equipment, air flow monitors, and various gas quantitative detectors. These records shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

**status:** **Not in Compliance with all requirements of this condition.**  
The AO has a list of pollution control equipment included( Appendix B)  
This list has clearly states scrubber parameters and the gauges required to measure the particular unit as recommended by the manufacturer.

The equipment list ( See attachment to this report)shows the following deviations:  
primarily of the liquid flow rates through the scrubbers:

1. Liquid flow meter on the Chlorine Scrubber: Plunger was stuck at the initial walk-through on April 1998. This was repaired by the May 7, return date. No logs were kept.
2. No liquid flow rates kept on the HCL and Ammonia combined scrubber, although a flow meter was installed
3. Liquid flow rates were not recorded on the Ferric Chloride production unit
4. The sodium bisulfite Harrington scrubber is currently off line and posted with a lock-out tag. No flow meter was seen on this scrubber.
5. The nitric acid production line was not in operation.

Manometers were installed as required, but no pressure drop parameters or other types of monitoring were included as a requirement on the list of Appendix B.  
The SOPs of this source are detailed and include procedures as required by the Approval Order, and training methods related to the control equipment as well as procedures for emergency response. These SOPs were reviewed. An index of SOP training manual is attached to this report.

**condition 17.** The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. Any breakdown lasting longer than two hours shall be reported to the Executive Secretary within three hours of the breakdown if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. During times other than normal office hours, breakdowns for any period longer than two hours shall be initially reported to the Environmental Health Emergency Response Coordinator. Within seven calendar days of the beginning of any breakdown lasting longer than two hours, a written report shall be submitted to the Executive Secretary. The owner/operator shall calculate/estimate the excess emissions (amount above AO limits) whenever a breakdown occurs. The total of excess emissions per calendar year shall be reported to the Executive Secretary. (See Appendix A)

**status:** The source is aware of this rule. The AO has the above UAC rule attached as Appendix A; its definition was reiterated.

**condition 18.** All records referenced in this AO or in applicable NSPS or NESHAP, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or her representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Records to be kept at this source shall include the following:

- |    |                                  |                       |
|----|----------------------------------|-----------------------|
| A. | Production or usage rate         | (Condition number 10) |
| B. | VOC and/or HAPs emission Records | (Condition number 13) |
| C. | Maintenance records              | (Condition number 16) |
| D. | Upset, breakdown episodes        | (Condition number 17) |

**status:** Records were available either at the initial contact date or within specified time frames except for item B. which was addressed specifically in Item 10 of this AO.

#### OPERATING PERMIT STATUS:

This source is presently designated: Minor-B and has not been required to submit an application for an Operating Permit to date.

#### EMISSION CAPS AND EVALUATION:

Caps are established for HAPs and VOCs only- see condition 13 for the results. Further restrictions are imposed by through- put and consumption limits, opacity limitations and so2 scrubber monitoring.

#### EMISSION INVENTORY:

Not required to submit inventory to DAQ at present.

Calculated engineering estimates are as follows:



Annual emissions for this source (the entire plant) are currently calculated at the following values:

	<u>Pollutant</u>	<u>Tons/yr</u>
A..	TSP .....	1.25
B.	PM <sub>10</sub> .....	0.67
C.	SO <sub>s</sub> .....	8.00
D.	NO <sub>x</sub> .....	3.08
E.	CO.....	0.61
F.	VOC .....	0.40
G.	NH <sub>3</sub> .....	1.00
H.	Cl <sub>2</sub> .....	2.61

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration, nonattainment area, and Title V source requirements of the UAC R307. They are not to be used for purposes of determining compliance.

#### SOURCE INSPECTION SUMMARY EVALUATION:

The source has made great strides in becoming compliant with their Approval Order, but has not viewed the equipment list (Appendix B) and its manufacturer's specification as a compliance issue although the AO's title is: "Approval Modification to Update Operating Parameters and Equipment List ..."

The CEM has been removed and excellent monitoring of the Sulfur Unit has been incorporated. Emissions from the stack were however above the 15% opacity allowed. The scrubber liquor for this is soda ash which may contribute to these emissions. The most optimal VEO conditions existed on the day of the observation.

#### RECOMMENDATION:

Issue a NOV for the following items:

1. Stack emission exceeded 15% opacity readings at the Sulfur Unit
2. Liquid flow rates were not monitored and/or recorded at the following points:
  - a. The Chlorine Scrubber
  - b. The Ferric Chloride Scrubber
  - c. The HCL / Aqua Ammonia Scrubber

#### RECOMMENDATION FOR NEXT INSPECTION:

1. A new NOI has been submitted to NSR. Check status.
2. Review the separate HAPs and VOC record keeping program, with PTEs calculated specifically for Xylenes and IPA
3. Equipment list (Appendix B) has to be re-submitted to DAQ by January 31 of each year with any changes incorporated.
4. Prepare "Initial" Fee schedule when compliant

ATTACHMENTS:

Production and throughput records.  
HAPS and VOC (IPA and Xylene) documents  
Appendix B (Control equipment list)  
SO<sub>2</sub> Unit Monitoring and Calibration Records  
SOP index  
VEO form  
One photograph of Bldg.12 with SO<sub>2</sub> unit and cooling tower stacks  
ITM form  
NOV

INSPECTORS SIGNATURE: 

# SAFETY (BLUE BINDER) SOP INDEX

SOP Class - #	Title	Rev.	Date
	Thatcher Company Emergency Response Program	2	1996
	Thatcher Company Employee Handbook	1	
IH - 1	Recording and reporting chemical releases	New	01/09/97
IH - 2	Chemical hygiene plan for laboratory	1	06/02/97
SF - 1	Lockout/tagout	1	04/10/95
SF - 2	Confined space entry	4	11/03/97
SF - 3	Hot work	2	04/12/95
SF - 4	Process safety management employee participation in the development, performance and review of the assessment, access to information	1	04/05/95
SF - 5	Process safety management hazard information	1	04/05/95
SF - 6	Accident/incident investigation	1	02/04/98
SF - 7	Hazard analysis of chemical-handling or manufacturing-process changes	1	02/19/98
SF - 8	Preparing and suiting up in a hazmat situation requiring self-containment	2	04/09/95
SF - 9	Disciplining & documenting safety & conduct violations	New	04/29/97
SF - 10	Forklift Safety Written Program	New	10/09/97
SF - 11	Hazard Communication Written Program	New	02/19/98
SF - 12	Respiratory Protection Written Program	New	02/19/98
	HM 126 Manual	2	10/22/96
	Division of Air Quality Approval Order (AO) for Thatcher Company (DAQE-341-97)	4	08/05/97
MP - 13	Scrubber operation procedures	1	10/08/93
MP - 29	Dust Collector Operating Procedures	New	04/14/98
EQ - 101	Sulfur dioxide scrubber	New	09/17/93
MC - 26	Liquid & solid waste handling	New	06/02/97
	Industrial Wastewater Discharge Permit	1997	12/31/01

C O V E R

FAX

S H E E T

To: Gisela Jensen (To be filed to the Executive Secretary)  
Fax #: (801) 536-4099  
Subject: Equipment update submission as per section 7 of the AO  
Date: April 1, 1998  
Pages: 2, including this cover sheet.

## COMMENTS:

No changes were made in 1997 on this equipment list. Attached is a copy of the spreadsheet originally sent to Jon Black of the DAQ.

RECEIVED

APR 02 1998 *hs*

Air Quality



From the desk of...

Bruce M. Bastian  
Regulatory/Safety Manager  
Thatcher Company  
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Salt Lake City, UT 84104

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Fax: (801) 972-4606

# AO APPENDIX 'B'

## THATCHER CO. AIR QUALITY EQUIPMENT LIST

## Appendix B

Please change the NaOH to Urea in the nitric acid scrubber

THERE WERE		NO CHANGES MADE IN 1997													
THATCHER COMPANY AIR QUALITY EQUIPMENT										7-29-96					
2-28-97	Scrubber ID	Scrubber Supplier	Model	Type or Serial #	Tag #	Stack Diameter Inches	Stack flow rate acfm	Column Length Feet	Product used in Scrubber	Total Liquid Gallons	Liquid Volume Spec	Liquid Flow GPM	Liquid Conc. Spec	Air Velocity Manometer	Product Detector
	Chlorine	Harrington	ECV 22-5lb	S030592-1	SCR-2	18	787	12	NaOH	500	Full	32 to 50	>5%	Dwyer 2002	CEA Inst. Crowcon -CI
	Glass reactor	Heil	732X-Special	Packed Bed	None	14	787	10	Water	100	Full	15 to 19	<2% prod.	Dwyer 2002	CEA Inst. Ammonia
	Alum	Heil	726 VP	Venturi	None	30	2500	N/A	Water	Spray					
	HCl - outside	Heil	732X-Special	Packed Bed	None	12	732	10	NaOH	400	Full	15 to 19	>5%	Dwyer 2002	
	Stainless react	Composite	HPE-100	Spray	None	10	Demand approx. 27.5 cfm	2	Water	Spray	Full	10 to 13	none		
	HCl/aq NH3	Harrington	ECV 22-4lb	39AVSC25	None	16	1163	12	NaOH	100	Full	32 to 50	>5%	Dwyer 2002	
	aq NH3 Use	Harrington	ECV 22-4lb	39AVSC25	None	16	1163	12	Water	100	Full	32 to 50	<2% aqua	Dwyer 2002	
	Aqua Tank	Composite	HPE-100	Spray	None	10	Demand approx. 27.5 cfm	2	Water	Spray	Full	10 to 13	none		
	Ferric Chloride	Harrington	ECV33-10lb	S-012693-1	None	14	1600	10	FeCl2	500	Full	75 to 10	>4.5%	Dwyer 2002	CEA Inst. Crowcon -CI
	Sod. bisulfite	Harrington	ECV34-5NB	S-032696-1	None	27.25	5000	14	Soda ash	445	Full	100	>6.5ph	Dwyer 2002	
	Nitric acid	Sly	320 Impinjet	JWM-7896	None	11	2165	8	<del>NaOH</del> Urea	150	Full	#1 5 to 6 #2 1 to 2	>5%	Dwyer 2002	
	Sulfur dioxide	Stebbins	E-SC-01	Packed Bed	SC-1	12	1670	10	Soda ash	500	Full	50 to 70	> pH 6.5	Durablock	Interscan Model LD-24
	Sod. bisulfite	Harrington	ECV 22-5lb	S030592-1	SCR-2	18	787	12	Soda ash	500	Full	32 to 50	> pH 6.5	Dwyer 2002	EA Inst. Crowcon -SO
	Dust collectors								Filter Mfg.	Filter Pore Size	Type of Filter				
	Soap mill #4	Mac Equipment	39AVSC25	self cleaning			2300		Mac Equipment	1 micron	Cartridge				
	Soap mill #4	Mikro-Pul							Mikro-Pul		bag				
	Pharmaceutical #7	Torid Downflo	Torid TD486	hopper			700		Torid	1 micron	Cartridge				
	Alumina #2	Mac Equipment	39AVSC25	self cleaning			2300		Mac Equipment	1 micron	Cartridge				
	Quick lime # 11	Mac Equipment	39AVSC25	self cleaning			2300		Mac Equipment	1 micron	Cartridge				
	Soda ash #12	Mac Equipment	39AVSC25	self cleaning			2300		Mac Equipment	1 micron	Cartridge				

1998 Production Master Control Record

Date		Lot #	First Quarter Data Product	Activity	Customer	Shipmen Inv. #	Assay	lab filed	Prod Date	BPR filed	Area	Water Gallons	Hrs	T-Chem Qty
02/10/98	98-	1275	isopropanol	rec				x	2.10	2.20	9			45280
02/19/98	98-	1576	isopropanol	rec				x	2.19	3.02	9			45104
02/20/98	98-	1594	isopropanol	rec				x	2.20	2.20	6			1428
03/19/98	98-	2398	isopropanol	rec				x	3.19	3.20	6			44980
03/26/98	98-	2621	isopropanol	rec					3.26	3.30	9			44760

195000

45120

IPA 421,672 lbs

210 TON  
IPA

Ugi

4-15-98

Xylene = 43,000 lbs. (Aug 97 to March 98)

21.5 TON  
~~XEE~~ XLENES  
(FIXED ISOMERS)

Ugi

RECORD GIVEN TO ME  
BY BRUCE BASTIAN

Ugi

pH METER CALIBRATION  
LOG

pH probe specification;  $\pm 0.1$  pH unit of NIST buffer before calibration.

**Time between calibrations cannot exceed 180 days.**

[illegible]

## SULFUR DIOXIDE MONITOR CALIBRATION LOG

Time between calibrations cannot exceed 90 days.

[illegible]

WRITE ON LOG IF SULFUR  
IS CUT OFF TO CHECK MONITOR FOR ACCURACY REMEMBER TO STATE IF THE MONITOR PASSED



Print Shift Operator Names:

Date: 4-13 Yr.: 98

Start of Log AM - PM

**B-12**

1. Justin
2. Todd
3. Todd

Shift Total in Pounds: \_\_\_\_\_

Time	Sulf pump RPM	Burner temp.	Syst vac.	SCT temp.	Sys. press.	SC level	SC pH #1	SC pH #2	SC stack ppm	AT-02 temp	Reboil temp	Strip tower level	CT temp	DT-01 level	DT-01 temp	70% tank level	83% tank level	% ACID	SO <sub>2</sub> level	comp. inlet press.	Scale read	Delta pound	Tons made	Oper. Initial	Bldg # SC pH	conductivity read
6:00																										
6:15	762	1993	-6.0	76	12.0	20	6.8	7.2	.52	83	221	96.4	86	30	85	111.4	238.3	74.5	27	-0.3	4	"	To storage 2291.259 @	7.6		
6:30																										
6:45	762	2007	-6.0	76	11.8	20	6.9	7.3	.51	82	221	96	87	30	86	111	238	74	27	0.0	"	"	2291.815 @	9.6		
7:00	762	2084	-6.0	76	11.8	20.7	6.9	7.3	.52	82	221	96.4	87	30.1	86	111.7	238	74.3	27	-0.1	"	"	2292.221 @	9.6		
7:15	762	2008	-6.0	77	11.8	20	6.9	7.1	.46	83	220	101.4	87	30	86	111.7	238	74.3	28.9	0.4	"	"	2292.600 @	9.6		
7:30	762	2014	-5.8	76	12.0	19.5	6.9	7.1	.46	84	220	100.7	86	29.8	86	111	238	74.4	27	0.5	"	"	2292.840 @	9.6		
7:45	762	2008	-5.9	76	12	19.5	6.9	7.1	.469	83	221	100	86	29.8	85	112	238	74.1	27	0.0	"	"	2293.040 @	9.6		
8:00	763	1994	-5.9	76	12.1	19.4	6.9	7.1	.469	83	221	100	86	29.8	85	112	238	74.1	27	0.2	"	"	2293.398 @	9.6		
8:15	763	1983	-6.1	78	12	20.2	7.0	7.1	.489	82	221	100	87	29.8	86	112	237.9	74	27	0.2	"	"	2293.743 @	9.6	.06	
8:30																										
8:45																										
9:00	763	1982	-6	78	12	19.4	6.9	7.1	.479	84	221	99	88	29.7	87	112.3	237.9	74	27	0.1	"	"	2294.78 @	9.6	.06	
9:15																										
9:30	763	1960	-5.9	78	12.2	20.3	6.9	7.2	.530	86	221	99.4	88	30	87	112.3	237.8	73.9	27	0.1	"	"	2295.310 @	9.6	.06	
9:45	763	1948	-5.9	78	12.3	19.8	6.9	7.2	.491	86	221	98.4	88	30	87	112.4	237.9	73.8	27	0	"	"	2295.607 @	9.6	.06	
10:00	763	1942	-6	80	12.2	20.1	6.9	7.2	.545	85	221	98.9	89	30	88	112.5	237.8	73.7	27	0	"	"	2295.891 @	9.6	.06	
10:15	763	1949	-5.9	79	12.2	19.6	6.9	7.2	.489	85	221	101.6	89	30	88	112.6	237.8	73.8	27	0.3	41K STORAGE	"	2296.173 @	9.6	.06	
10:30																										
10:45																										
11:00																										
11:15	763	1910	-5.9	78	12	19.9	6.8	7.0	.627	84	222	99	92	29.9	90	112.9	237.6	73.3	26.9	0	47K	"	2297.409 @	9.6	.06	
11:30	763	1913	-5.9	76	12.1	19.5	6.9	7.1	.493	82	222	98.8	91	29.8	89	112.8	237.6	73.3	27	0	"	"	2297.623 @	9.6	.06	
11:45	763	1916	-6.1	79	12.1	19.1	7.0	7.2	.556	84	222	99.2	91	29.8	89	112.9	237.4	73.2	26.9	0	"	"	2297.964 @	9.6	.06	

Comment section

- 1.
- 2.
- 3.
- 4.

Cooling tower meter readings

Cooling Water makeup \_\_\_\_\_

Cooling Tower Bleed to Drain \_\_\_\_\_

Print Shift Operator Names:

1. Allan
2. L. Joyd
- 3.

Date: 4-13 Yr: 98

Start of Log AM - PM

B-12

Shift Total in Pounds: \_\_\_\_\_

Time	Sulf pump rpm	Burner temp	Syst vac.	SCT temp	Sys. press	SC level	SC pH #2	SC pH #1	SC stack ppm	AT-02 temp	reboil temp	Strip tower level	CT temp	DT-01 level	DT-01 temp	70% tank level	83% tank level	% ACID	SO <sub>2</sub> level	comp. Inlet press	scale reading	delta pound	Tons made	oper. Initial	Slidg # scrub Ph	cool conduct
12:00																										
12:15																										
12:30	762	2000	-5.9	75	11.9	19.7	6.9	7.2	51	82	221	100	85	30	83	109	239	75	26.8	-0.3	178400	2150	2283.769	@	9.6	.06
12:45	762	2005	-6.1	75	11.8	20.1	6.9	7.2	50	82	221	99	85	30	83	109	239	75	26.9	0.1	179100	700	2284.119	@	9.6	.06
1:00	762	2008	-6.1	75	11.8	20.3	6.9	7.2	52	82	221	98.9	85	30.1	83	109.8	239	75.1	27	0.0	179800	700	2284.540	@	9.6	.06
1:15	762	2014	-6.1	75	11.7	20	6.9	7.2	50	82	221	99	86	30	84	110	238	75	27	0.1	To storage			@		
1:30	762	2028	-6.1	76	11.7	19.6	6.9	7.1	47	81	221	100.7	86	30.9	85	110	238	74.9	27	0.3	"	"	2285.278	@	9.6	.06
1:45	762	2033	-6.1	76	11.8	19.5	6.9	7.1	49	81	221	98.4	86	30	85	110	238	74.9	27	-0.2	"	"	2285.606	@		
2:00	762	2044	-5.9	76	11.8	20.3	6.9	7.1	48	83	221	97.8	87	30	86	110	238	74.9	27	-0.2	"	"	2285.985	@	9.6	
2:15	763	2046	-5.9	76	11.9	19.7	6.9	7.2	1	84	220	99	86	30	85	110	238	74.7	27	1	"	"	2286.386	@	9.6	.06
2:30																										
2:45																										
3:00	763	2052	-5.9	75	12.2	20.4	6.9	7.1	70	84	220	98.1	86	30	86	110.5	238.8	74.7	27	0.1	"	"	2287.287	@	9.6	.06
3:15																										
3:30																										
3:45																										
4:00																										
4:15	762	1962	-6.2	75	12.2	19.5	6.9	7.1	1	80	221	101	86	30	84	110.9	238	74.7	27	0.3	Storage		2288.800	@	9.6	.06
4:30	762	1949	-6.1	75	12.2	19.5	6.9	7.1	1	80	221	99	86	30	84	110.9	238	74.7	27	0.0	"	"	2288.150	@	9.6	.06
4:45	763	1967	-6.1	76	12.0	20.5	6.9	7.3	1	81	221	101	86	30	84	111	238	74.6	27	0.4	"	"	2289.386	@	9.6	.06
5:00	762	1962	-6.1	76	12.1	20.4	6.9	7.2	1	81	221	101	86	30	85	111	238	74.6	27	-0.2	"	"	2289.680	@	9.6	.06
5:15																										
5:30																										
5:45																										

Comment section

1. Turbidity analyzer still out, checked fuses they look ok.
- 2.
- 3.
- 4.

Cooling tower meter readings

Cooling Water makeup \_\_\_\_\_

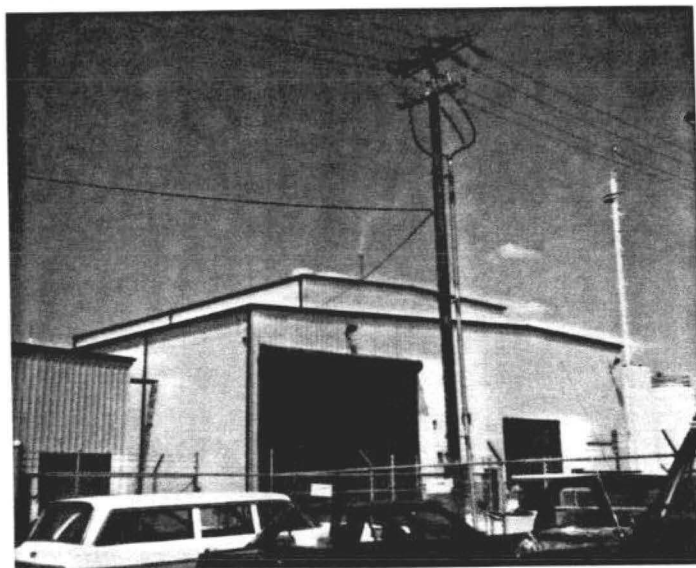
Cooling Tower Bleed to Drain \_\_\_\_\_

# **Summary of Thatcher Production in Pounds**

	CI (100%) <u>Monthly</u>	CI (100%) <u>Rolling Annual</u>	itric (98%) <u>Monthly</u>	Nitric (98%) <u>Rolling Annual</u>	S diox (100%) <u>Monthly</u>	S diox (100%) <u>Rolling Annual</u>
January 1997	742,069		735,420		1,354,810	
February 1997	535,742		640,932		561,220	
March 1997	561,942		529,452		1,462,400	
April 1997	703,911	635,916	567,440	618,311	1,632,540	1,252,743
May 1997	917,108	692,154	637,308	622,110	1,539,310	1,310,056
June 1997	1,120,138	763,485	726,014	639,428	1,033,160	1,263,907
July 1997	923,715	786,375	724,200	651,538	1,326,570	1,272,859
August 1997	1,035,315	817,493	1,185,625	718,299	1,547,520	1,307,191
September 1997	973,146	834,787	838,094	731,609	1,996,850	1,383,820
October 1997	895,629	840,872	1,233,012	781,750	1,335,140	1,378,952
November 1997	475,905	807,693	1,511,796	848,118	333,940	1,283,951
December 1997	521,669	783,857	1,233,504	880,233	1,292,190	1,284,638
January 1998	533,626	766,487	1,288,776	926,346	1,891,440	1,329,357
February 1998	735,591	783,141	1,174,362	970,799	1,589,410	1,415,039
March 1998	456,133	774,324	901,968	1,001,842	1,028,820	1,378,908
April 1998						
May 1998						
June 1998						
July 1998						
August 1998						
September 1998						
October 1998						
November 1998						
December 1998						
Tons (avg. annual)	4,453		5,571		7,970	

NOTE: PRODUCTION IS SHOWN IN  
POUNDS. AVERAGES ARE SHOWN  
IN TONS *Yij*

*Dale Hansen*  
*Thatcher Co.*  
*April 14, 1998*



THATCHER  
5/7/98  
SO<sub>2</sub> UNIT STACK

1:45pm  
→ N 4/4



**STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF AIR QUALITY  
VISIBLE EMISSION OBSERVATION FORM**

Page 1 of 1

Type of Inspection: Initial ☒ Partial Initial ( ) Stack Test ( ) CEM ( ) Annual ☒ Followup ( ) Surveillance ( ) Complaint ( )

Source Name: THATCHER CHEM  
Street Address: 1900 FORTUNE RD  
City/County: SLC  
Phone: 801-972-4587  
AIRS ID: 035-00119

Facility: SO<sub>2</sub> PRODUCTION  
Equipment:  
Control Equipment: SCRUBBER

Emission Point: STACK

Height of Discharge Relative to Observer:

Distance from Observer:

Condensed Water Vapor Present? Y/N ☒

Attached ☐ Detached ☐

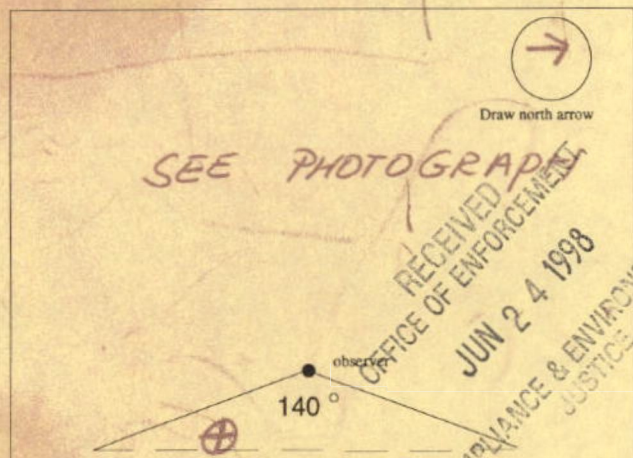
Length of Condensed Water Vapor Plume:

Background: BLUE SKY

Sky Conditions: Clear ☐ Partly Cloudy ☒ Overcast ☐

Wind Direction: Wind Speed: CAUT mph

Ambient Temp.: 61 °F RH: 59 %



Sun ☒  
Wind ☒  
Emission Point with Plume ☐  
Observation Point ☒

Observer's Signature:

Affiliation: State of Utah, Department of Environmental Quality

Division of Air Quality

I Have Received a Copy of These Observations:

SIGNATURE: Dale J. Harker

Printed Name: Dale J. Harker

Title: Technical Director

Distribution: white- file; canary- EPA; pink- inspector; gold- owner/operator

Observation Date: MAY 7 1998

Start Time: 1:45pm Stop Time:

1. OPEN ISSUES: EMISSIONS ON SO<sub>2</sub> UNIT

min \ sec	0	15	30	45
1	15	20	25	15
2	15	25	20	25
3	15	20	15	15
4	15	15	25	20
5	20	15	20	20
6	15	20	15	20
7				
8				
9	TOT: 44.5 / AV. = 18.5 %			
10	24			
11				
12				

2. EQUIPMENT LIST

✓ #7 REC'D - CHANGE NaOH TO UREA  
Average Opacity for Highest Six-Minute Period: 18.5

✓ #7 ANNUAL EQUIP. LIST UPDATE 1/31/98  
Comments:

✓ AO 8-5-97 JARE - 341-97  
COND. #:

-9 VED: SCRUBBERS 15% MAX  
BH 10% "

ALL OTHERS 20% "

SCRUBBERS - FLOW METERS & RATE

10 20,000 TP4 SO<sub>2</sub> ANHYDROUS (SEE LIST)

10,500" LIQ. CL<sub>2</sub> "

10,000 TP4 92% HNO<sub>3</sub> - NEW AO

(RECORDS) 8/97

24-2500°F IN THE HEATER (TEST)

11. SO<sub>2</sub> SCRUBBER 30ppm TO

PH OF LIQ 6.5 2/98

11. 2 PROBES FOR PH METER

11. 10 STD OF PH IN FILE

12 ONLY NG FOR 10 FUEL 1104

13 VOC + HAPS 0.4 + 3.61 TP4 NO

15 STARTING 5/1/97 AIR HAPS

MONITORING - DONE

✓ CALIBRATION EVERY 180 days

RECORDS

✓ EMERGENCY RESPONSE

✓ 16 SOP - LOGS ON EM. CONTR. DEV.

- PROCESS

- HOW ARE EMP

- TRAINED

BH 30 TO CONTROL

- ALUMINA & QUICK LIME

MIXED ISOMERS OF XYLENE

STACK TEMP ~ 99F

CONTACTED JON

1ST QUARTER 1998 =

DRIVERS TRAINED LOADING

GMP CHECK ON

LAURETH SULFATE COCONUT BLEND

COPY OF PROCESS SAFETY MANAGEMENT INDEX OF SOP & EMERG. PROCED.